

# FP12 Frame Overlap Chopper

---

## **Project Status**

*April 2002*

Mechanical and Control Systems delivered to LANSCE

*July 2002*

First coated rotor delivered

*September 2002*

Second coated rotor delivered

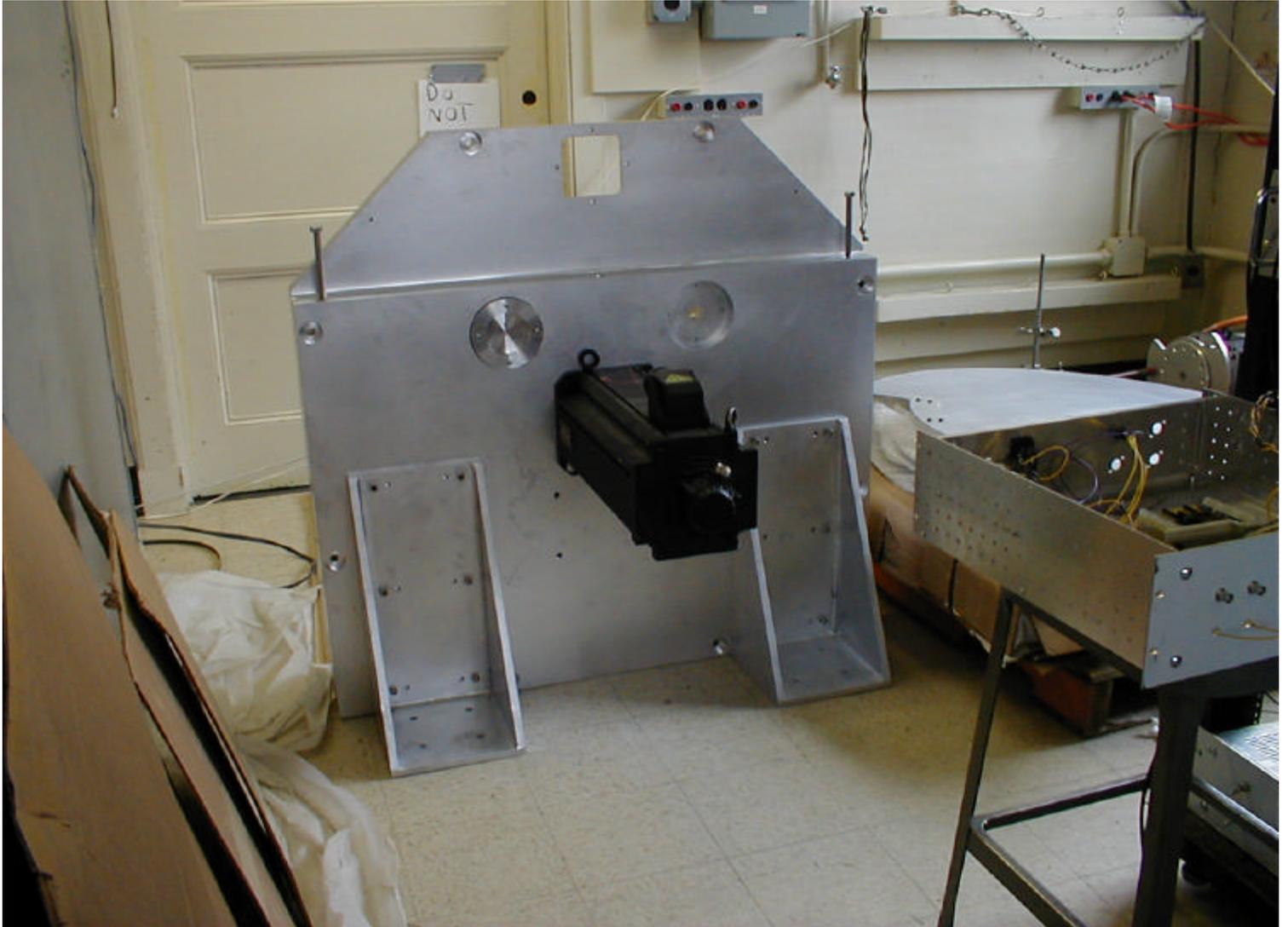
Test rotor balanced

Phase lock achieved with fully assembled system



# FP12 Frame Overlap Chopper

---



Outside of housing, showing motor

# FP12 Frame Overlap Chopper

---



Inside of housing

**Left:** motor shaft and pickup coils

**Right:** rotor and counterweights

# FP12 Frame Overlap Chopper

---

**Table 1:** General rotor and counterweight parameters

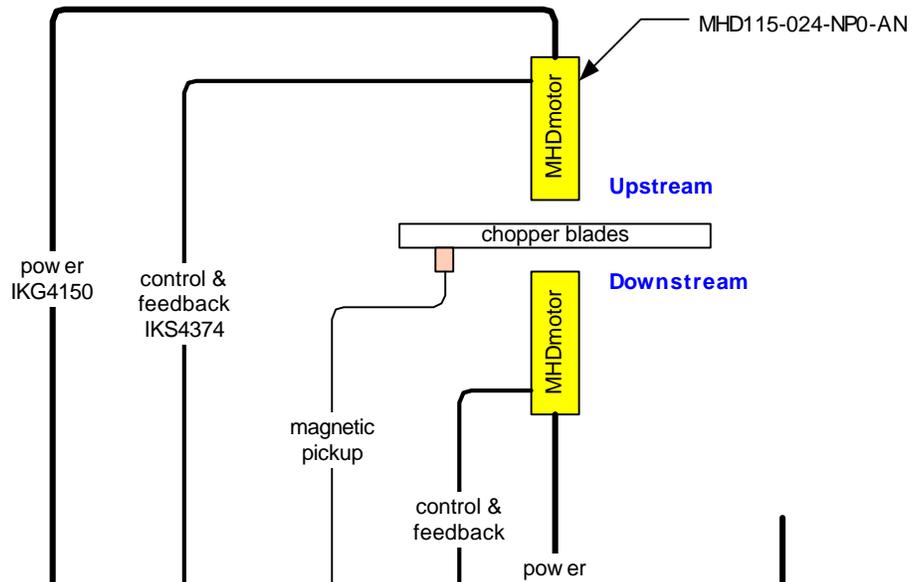
<u>parameter</u>	<u>unit</u>	<u>value</u>
rotor radius	mm	512
aperture radius	mm	390
inner counterweight radius	mm	331.669
rotor thickness	mm	3.175
rotor density	g/cc	2.7
counterweight thickness	mm	12.7
counterweight density	g/cc	2.7

**Table 2:** Rotor 1 parameters (aperture = 109.28 deg)

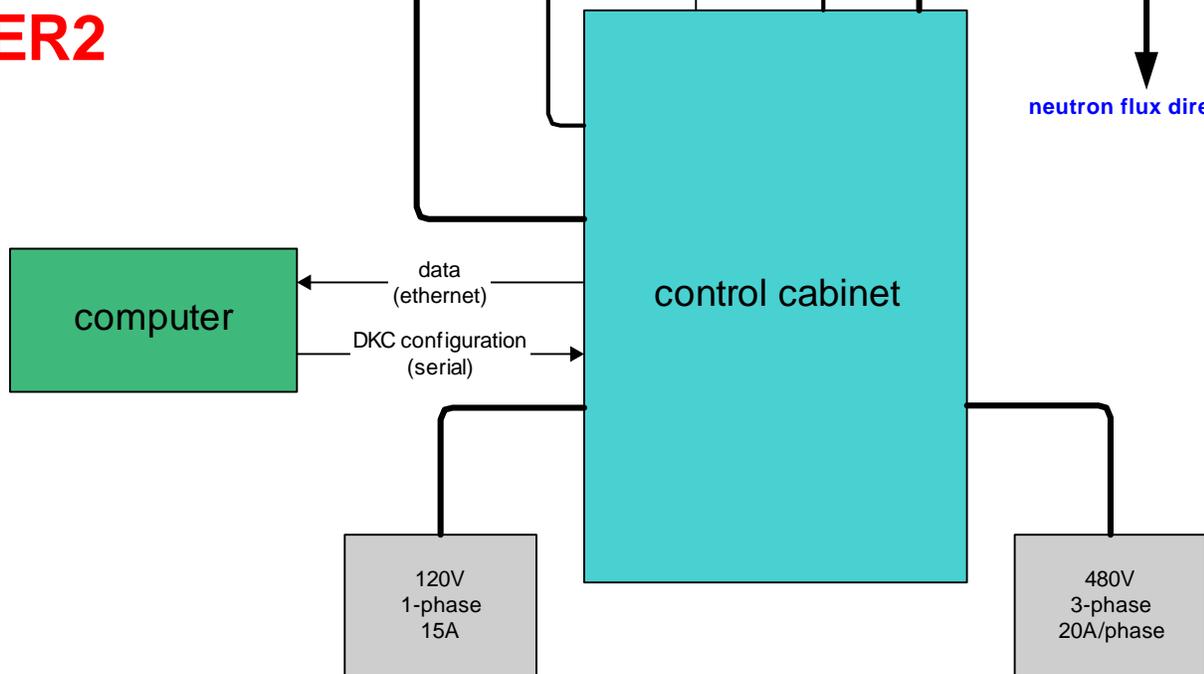
<u>parameter</u>	<u>unit</u>	<u>value</u>
mass of counterweight	kg	1.377
mass of rotor	kg	6.160
mass of Gd <sub>2</sub> O <sub>3</sub> plating	kg	0.453
total moment of inertia	kg-m <sup>2</sup>	1.013

# FP12 Frame Overlap Chopper

**ER1**

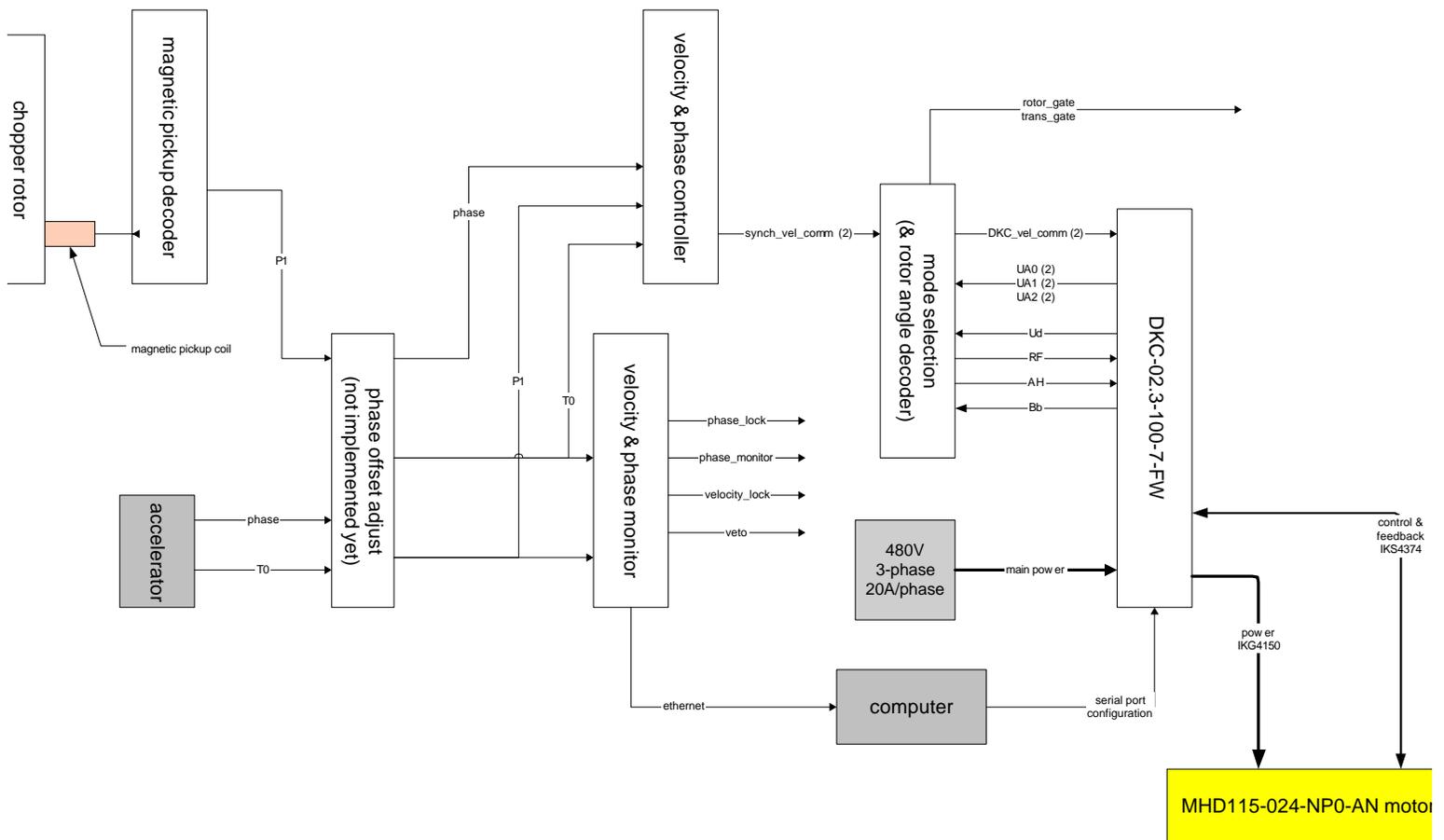


**ER2**



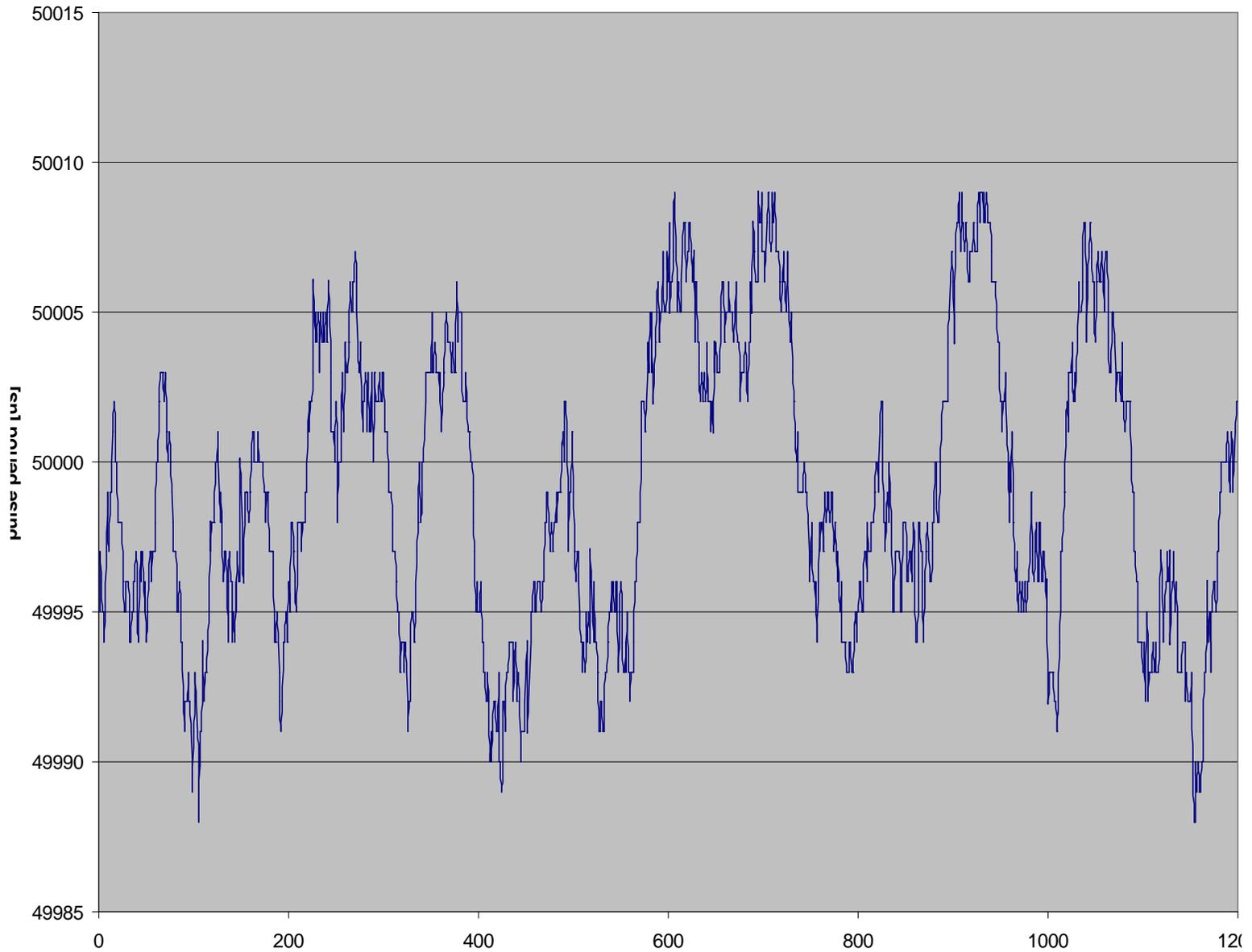
# FP12 Frame Overlap Chopper

## Electronic control system schematic

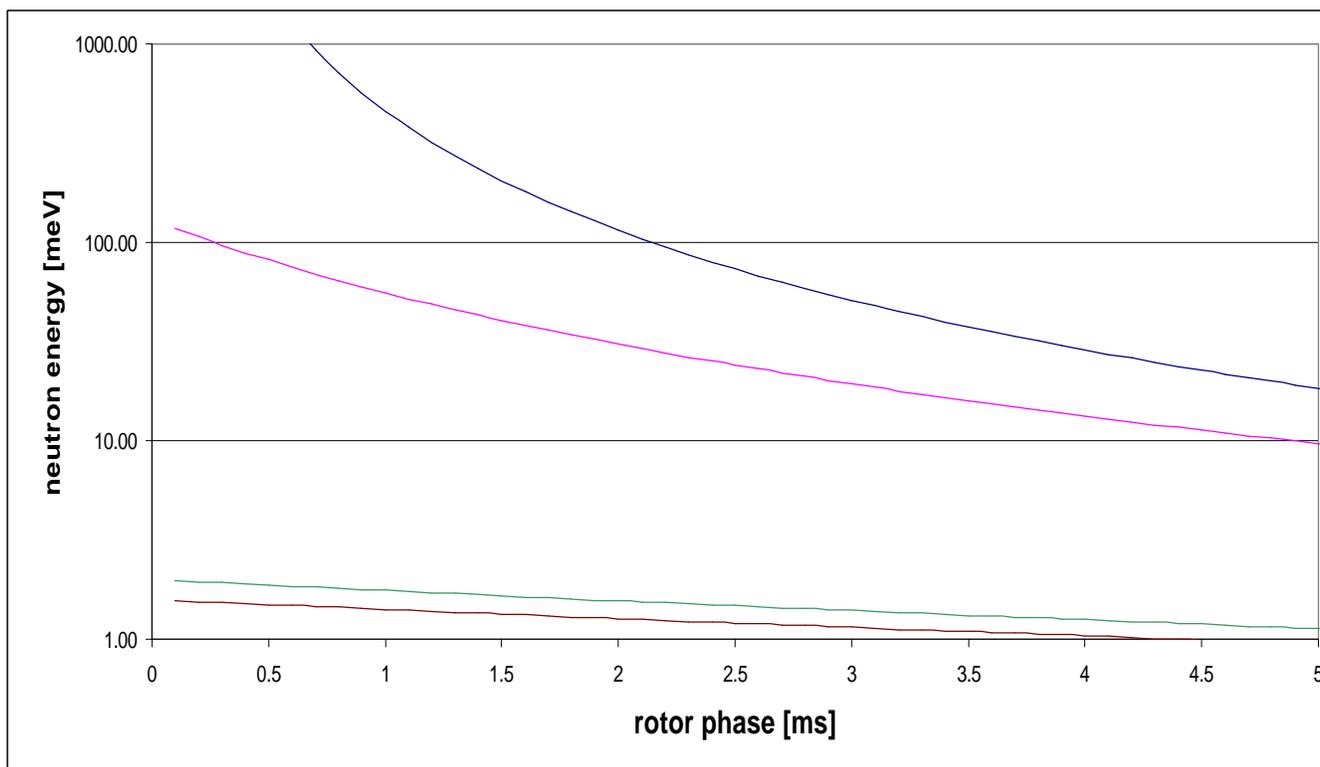
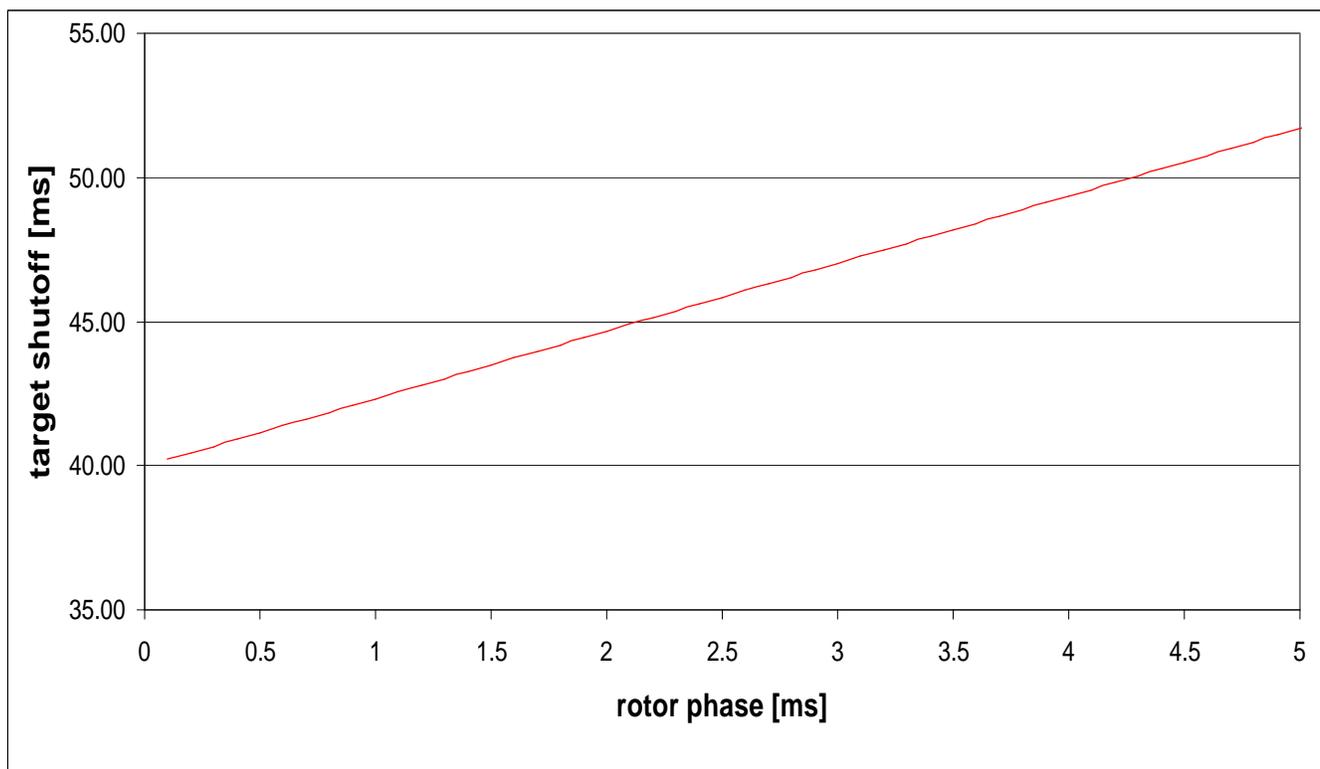


# FP12 Frame Overlap Chopper

---



# FP12 Frame Overlap Chopper



# FP12 Frame Overlap Chopper

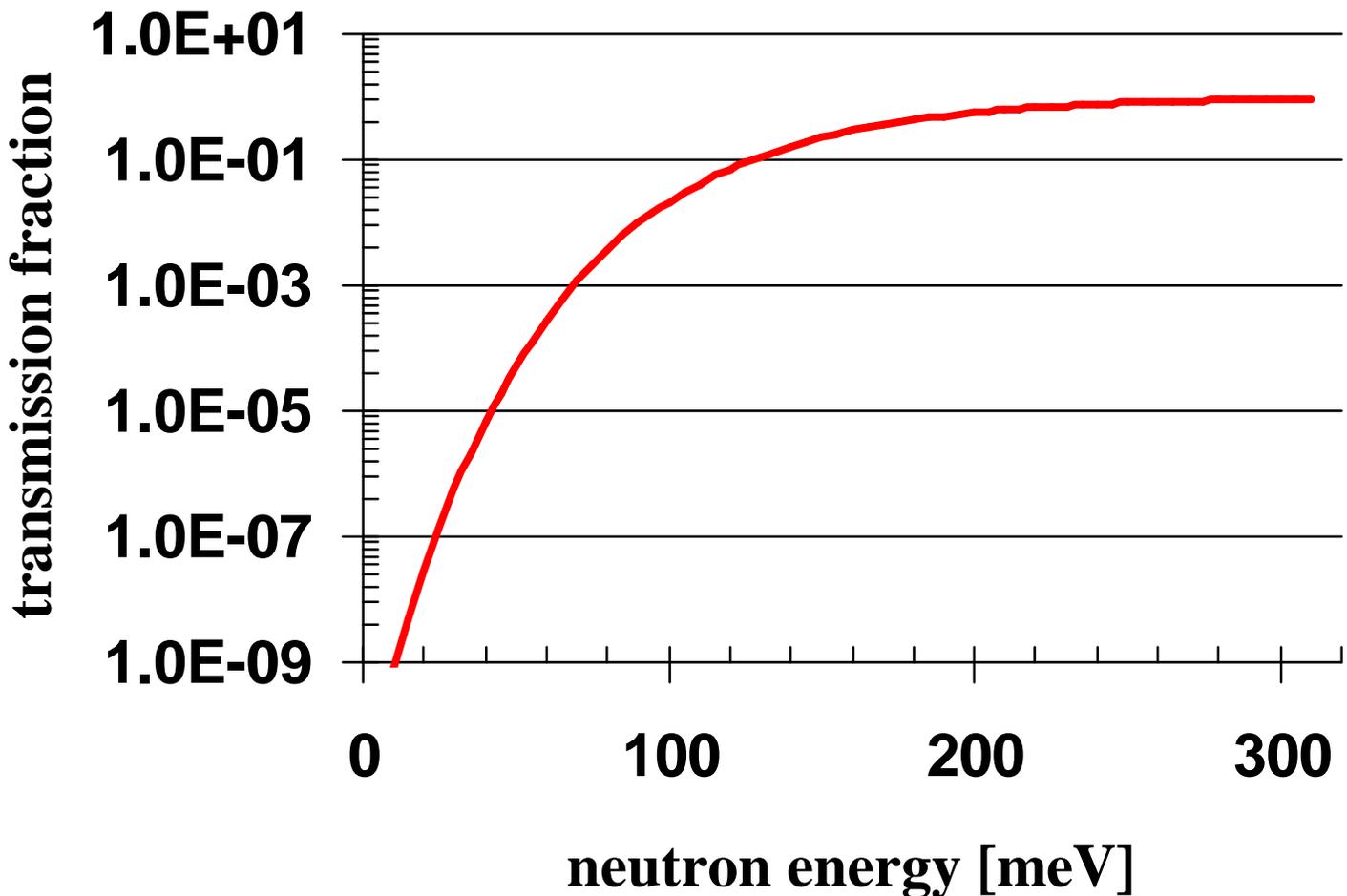
---

## Two identical rotors

- 109 degree apertures
- 1/8" thick aluminum
- Provide redundancy and flexibility
- Coated with 0.01"  $Gd_2O_3$

## Indramat MHD115 motors

- 140 N-M maximum torque



# FP12 Frame Overlap Chopper

---

## **Project Schedule**

*Oct/Nov 2002*

Beam test of Gd<sub>2</sub>O<sub>3</sub> coating

Balancing of coated rotors

*Nov 2002 - Jan 2003*

System tests

*Feb 2003*

Installation

## **Remaining Issues**

Motor water cooling?

Shift to VME controller?

estimated cost ~ \$7K

# FP12 Frame Overlap Chopper

## Electronic control system schematic

elements replaced by proposed VME system

